

5.1

Step 1: Q.1.

a) Web browsing:

Client name: Web browser

Server name: Web browser

The caches can be placed in both web browser and servers to speed up the process

Step 2:

b) On line banking

Client name: Web browser

Server name: Bank server

The caches can be placed either web browser or bank servers to speed up the process

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a) Web browsing:

<u>Levels</u>	<u>Size</u>	<u>Latency</u>
Browser cache	Fraction of client computer disk	Local disk
Proxy/CDN cache	Proxy disk	LAN and proxy disk
Server side cache	Fraction of server disk	WAN and server disk
Server storage cache	Server storage	WAN and server storage

b) On line banking servers

	<u>Size</u>	<u>Latency</u>
Browser cache	% client hard	Local hard disk
Server side cache	% server disk	WAN and server disk
>> storage cache	server storage	WAN and server storage

c. Relationship between cache and its access latency
 In the web browsing and the online banking, the latency is not directly related to size of the cache

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a) Web browsing

Page is the unit of data transfer between hierarchies

The transfer latency gets bigger with the data size and data Location

b) On line banking

Web page is the unit of data transfer between hierarchies

The transfer latency gets bigger with the data size and data location.

Q4

Communication bandwidth and server processing bandwidth are two main factors to design memory hierarchy.

a. Web browsing

- 1) Browser: This is communication bandwidth
- 2) Proxy cache: This is the communication bandwidth and server processing bandwidth.
- 3) Server side cache: This is the communication bandwidth and server processing bandwidth
- 4) Server storage: server processing bandwidth
These are more cost money.

- b)
- 1) browser: This is communication bandwidth
 - 2) Server side cache: This is the communication bandwidth and server processing bandwidth
 - 3) server storage: server processing bandwidth
These are more cost money

5.1

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a) In web browsing it depends on proximity between interests of clients. Different clients use different browsers such as Explorer or Firefox and so on as a result both spatial and temporal redundancy. Similar clients by mutual pre-fetching improve both.

b.) Multiple clients cannot request for similar page at a time this is not applicable.

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a) In web browsing, the example for the cache can be providing out of date data is server up date the page content. This can be avoided by selectively cached page content (or) "expires" header.

b) In online banking, the example for the cache can be providing out of date is server update to financial details. This can be avoided by selectively cache non financial content.